IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF NORTH CAROLINA
CHARLOTTE DIVISION
Civil Action No.: 3:18-cv-197-RJC

BRUCE RHYNE and JANICE RHYNE,	)
	)
Plaintiffs,	)
	)
vs.	)
	)
UNITED STATES STEEL CORPORATION, *et al.,*	)
	)
Defendants.	)
	)

PLAINTIFFS' OPPOSITION TO DEFENDANTS UNITED STATES STEEL CORPORATION AND SAFETY-KLEEN SYSTEMS, INC.'S JOINT MOTION TO EXCLUDE THE TESTIMONY, OPINIONS, AND REPORT OF DR. ROBERT HERRICK

INTRODUCTION

The Safety-Kleen Systems, Inc. ("Safety-Kleen") and United States Steel Corporation ("US Steel") Joint Motion to Preclude Robert Herrick, CIH (Doc. 197, brief at Doc. 201) should be denied. Regrettably, the motion is replete with false statements of fact. Indeed, it is as if Defendants' strategy in this motion is to make as many false statements as possible in the hopes that the Plaintiffs will not have the time to refute them all. Defendants' false statements would lead this Court to decide the motion on an inaccurate record.[1] As a result, this opposition is unnecessarily long as Plaintiffs are forced to demonstrate why Defendants' claims are untrue, so that the Court can decide the motion based on the actual evidence. The very few defense arguments that do address the actual record in this case only highlight questions of fact and credibility for the jury to weigh in evaluating competing expert opinions. US Steel and Safety-Kleen fail to establish that Dr. Herrick's opinions should be precluded under *Daubert*.

When the dense fog of the defense falsehoods is lifted by the truth, the following is revealed: (1) the ART model is a generally accepted and reliable method for modeling an individual's exposure to benzene (as the District of Massachusetts held in *Milward, infra*); (2) Dr. Herrick properly applied the ART program to model Mr. Rhyne's exposure to benzene from Safety-Kleen parts washing solvent (he used a different method for Liquid Wrench); (3) Dr. Herrick's opinions are supported by ample evidence of record; and (4) Dr. Herrick demonstrated a high degree of intellectual rigor by not blindly adopting another expert's opinions, but rather, conducting an exacting review of the record of his own even where it resulted in opinions that did not ultimately benefit the Plaintiffs' case against certain Defendants.

[1] Truth matters. Safety-Kleen and US Steel's decision to make untrue statements regarding Dr. Herrick's testimony and opinions has caused the Plaintiffs to expend unnecessary time, effort and money to correct those untrue statements. Plaintiffs have requested an extension of the normal page length (LCvR 7.1(d)) for this brief.

FACTUAL BACKGROUND

Dr. Herrick was retained by the Plaintiffs to perform an expert exposure assessment of Mr. Rhyne's decades-long exposures to benzene from Defendants' products. Dr. Herrick's qualifications are reviewed below as expert qualifications are relevant to the *Daubert* inquiry.

Dr. Herrick is a Certified Industrial Hygienist and Fellow of the American Industrial Hygiene Association. He has more than 45 years' experience as an industrial hygienist. He was employed an industrial hygienist by the U.S. Army from 1973 to 1976 and the National Institute for Occupational Safety and Health from 1977 to 1994, where he conducted workplace air monitoring and exposure assessments (including regarding solvents and mineral spirits used by mechanics for cleaning parts) and established recommendations for workplace exposure safety. *See* Dr. Herrick dep. 9/23/19 from *Howell v. Safety-Kleen*, Exhibit 2, pp. 33:12-17, 35:15-37:2, 39:19-48:3, 53:2-54:12, 55:9-61:24. He conducted industry-wide surveys for benzene exposure and presented results of retrospective exposure assessments used for the NIOSH Pliofilm benzene epidemiology study. *Id*. at 55:9-61:24. He held the positions of Chief of Industrial Hygiene for the Industry-Wide Studies Branch of NIOSH, Assistant Chief of the Industry-Wide Studies Branch, and Associate Director for Science the Acting Deputy Director. *Id*. at 64:23-65:21, 66:17-25, 68:8-70:11.

Dr Herrick taught industrial hygiene at the Harvard University School of Public Health from 1994-2018 and the University of Cincinnati from 1989-1994. *See Id.*, at 69:23-73:5; *see also* Herrick CV, Ex. 3. His teaching and academic research at Harvard focused on exposure assessment and its interface with epidemiology. *Id*., pp. 69:23-73:5. He was selected as an expert reviewer for a large series of petroleum industry-funded benzene exposure assessment and

epidemiology studies in order to provide consulting for the design and conduct of the retrospective exposure assessments. *Id.* at 73:5-74:13, 75:19-76:16.

Dr. Herrick, in performing his benzene exposure analysis for Mr. Rhyne's exposures, utilized sound methodology in determining Mr. Rhyne's cumulative benzene exposures. Namely, with regard to the relevant moving Defendants, he used the scientifically sound ART model to analyze Mr. Rhyne's benzene exposures through use of Safety-Kleen's parts washing solvent, and he used the near field/far field model when analyzing Mr. Rhyne's benzene exposure through use of the USS raffinate version of Liquid Wrench.

In 2018, Dr. Herrick, along with Mallory LeBlanc, Joseph G. Allen, and James H. Stewart, authored a scientific study published by the Harvard T.H. Chan School of Public Health titled, "Comparison of the near field/far field model and the advanced reach tool (ART) model V1.5: exposure estimates to benzene during parts washing with mineral spirits." *See* Ex. 11 to Defendants' Memo of Law ("LeBlanc Study") (filed at Doc. 201-11). The purpose of the LeBlanc Study was to compare two widely utilized exposure assessment methods -- the ART model and the near field/far field model -- in order to evaluate which model more closely predicted mineral spirits benzene exposures as compared to actual air monitoring of mineral spirits benzene exposures reported by Fedoruk. *See* LeBlanc Study, abstract ("In this study, benzene exposure during the use of a metal parts washer was modeled using ART V1.5 and compared to actual measured workers samples and to NF/FF [Near Field/Far Field] model result from three previous studies."). The peer-reviewed paper concluded that the ART model was a *more accurate* predictor of benzene exposures in mineral spirits than the near field/far field, in that its results were closer to the air monitoring results than those of the NF/FF model, thereby

validating and peer-reviewing the ART model. *See* LeBlanc Study, abstract ("The ART 50th percentile exposure estimate for benzene (0.425 ppm) more closely approximated the reported measured mean value of 0.50 ppm than the NF/FF model estimates of 0.33 ppm, 0.070 ppm or 0.2 ppm obtained from other modeling studies of this exposure scenario.").

LEGAL STANDARD

Plaintiffs, to conserve space herein, respectfully refer the Court to their summary of the legal standard found in their remaining *Daubert* briefs filed herewith.

ARGUMENT

A. The ART Model is a Reliable Method Designed for Assessing Individuals' Benzene Exposure and was Reliably Applied by Dr. Herrick.

Dr. Herrick used the ART model for assessing Mr. Rhyne's exposures to benzene from the Safety-Kleen parts washing machine[2] (among other products) and he used the near field/far field model (NF/FF) for examining his exposures to benzene from the raffinate containing version of Liquid Wrench.[3] The NF/FF model used by Dr. Herrick to analyze Mr. Rhyne's exposures to Liquid Wrench is the exact same exposure model used by ***moving Defendants' own***

[2] *See* Dr. Herrick's Expert Report, Doc. 126-4, at 26 ("The ART exposure modeling approach has been applied to parts washing with mineral spirits, and the resulting benzene exposure estimates have been compared to several other sources of measured, and estimated benzene exposures. In the LeBlanc et al. (2018) investigation, the ART 50th percentile TWA exposure estimates were closer to the measured exposure values than the other modeling approaches. The ART modeling approach was therefore considered to be suitable to estimate Mr. Rhyne's benzene exposures while using mineral spirits.").

[3] The ART model criticized in Defendants' joint brief is completely inapplicable to US Steel. US Steel dropped a footnote in the brief, which is focused entirely on the ART model, stating, "Even though Dr. Herrick did not use the ART model for his assessment of exposure to US Steel's raffinate, the use of it for other products necessarily skews and renders unreliable his overall assessment of a cumulative dose. The proposition 'garbage in, garbage out' applies." Def. Br., Ex. 7, Doc. 201-7, p. 7 n. 4. The fact remains Herrick used a different method for US Steel (NF/FF) than for Safety-Kleen (ART). To follow US Steel's analogy, for them he used a different garbage disposal. Nor can US Steel attack it on *Daubert* grounds given its broad acceptance by the American Industrial Hygiene Association and others. *See* Dr. Herrick's Expert Report, Doc. No. 126-4, at 22 ("Mr. Rhyne's inhalation exposures can be estimated during these work process steps using a modeling approach derived from the American Industrial Hygiene Association. The predicted exposures resulting from the vaporization of the benzene in Liquid Wrench are calculated using the Near Field/Far Field (2 Box) model approach.").

exposure expert, Dr. Spencer. That is likely the reason they buried the inference of its use by Dr. Herrick in a footnote and their brief is devoid of any criticism of the model or its use by Dr. Herrick with relation to Liquid Wrench. *See* Doc. No. 193-2, Dr. Spencer's Report, at pp. 15-16 ("I used the Near-Field, Far-Field (NF-FF) predictive model supported by actual air monitoring data to provide a reasonable worst case estimate of Mr. Rhyne's potential exposure to benzene from using the previously listed products.").[4]

Factors that may bear on the reliability of the expert's testimony include (1) whether his method can be (and has been) tested; (2) whether it has been subjected to peer review and publication; (3) its potential rate of error and are standards controlling its application; and (4) whether the method enjoys general acceptance within the scientific community. *Daubert*, 509 U.S. at 593-94; *United States v. Crisp*, 324 F.3d 261, 265-66 (4th Cir. 2003).

Rule 702's gatekeeping function does not require the Court to pick one expert's methodology over another's. And "the fact that each party's expert reaches different conclusions . . . is a matter for the trier of fact to resolve." *See In re Fluidmaster, Inc., Water Connector Components Prod. Liab. Litig*., No. 14-CV-5696, 2017 WL 1196990, at *25 (N.D. Ill. Mar. 31, 2017) ("Simply put, Defendant's only evidence that Fallows ignored an alternative cause is the opinions offered by its own expert, Meek. The purpose of Rule 702's gatekeeping function is not to empower the Court to pick Meek's methodology over Fallows's. The fact that each party's expert reaches different conclusions about the presence and significance of tool marks on Plaintiffs' coupling nuts is a matter for the trier of fact to resolve.").

[4] For purposes of responding to the Defendants' joint brief, Plaintiffs focus on their misguided attacks on the ART model, as that is the primary basis of their *Daubert* motion.

To the extent that Defendant disagrees with our expert's methodology or conclusions, Defendant is free to elicit its own expert's testimony and engage in cross-examination at trial. *See Kristensen v. Spotnitz*, No. 3:09-CV-00084, 2011 WL 4380893, at *11 (W.D. Va. Sept. 21, 2011) ("To the extent that Defendants' experts disagree with Vilseck's methodology or conclusions, Defendants are free to elicit that testimony."). Simply providing a "laundry list of factors" allegedly missed by an expert does not, by itself, suggest that his methodology is unreliable. *Tilstra v. Bou-Matic, LLC*, No. 12-CV-827-SLC, 2014 WL 4662483, at *7 (W.D. Wis. Sept. 19, 2014) (holding that expert's factors "all affect the weight" of the expert's opinion, not the reliability of the "method to calculate the result he reached"), *aff'd*, 791 F.3d 749 (7th Cir. 2015). *Absent a significant link to the reliability of the expert's methodology*, Defendant's criticisms of an expert are plainly a matter for cross-examination, not a basis for exclusion. *Daubert*, 509 U.S. at 596; *Phillips v. Raymond Corp*., 364 F. Supp. 2d 730, 745 (N.D. Ill. 2005) ("[Plaintiff's] quarrels with [expert's] inclusion or rejection of certain factors or calculations (such as grip strength), implicate his conclusions and are thus properly left for exploration through cross-examination.").

1. The ART Model is Properly Applied to Assess An Individual's Benzene Exposures.

The ART model is a generally accepted model for performing exposure assessments for individuals, as well as groups, which has been subjected to peer review and tested. Defendants argue that the ART model is "not scientifically valid for the purpose for which Dr. Herrick attempts to deploy it" and thus his testimony must be excluded. Def. Br. at 7. They essentially claim that the use of the ART model to assess an individual's exposure is novel and therefore not reliable. The argument is founded on the false premise that the ART model is somehow limited

to groups in Europe (instead of individuals in the U.S.) since it was used to assess exposures "across **different workplaces in Europe**"[5] for purposes of compliance efforts under REACH [the European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals]. Def. Br. at 8 (boldface in original).

Defendants' argument is easily refuted. As a matter of common sense, the exposure assessment method is a reliable method both for individuals and groups, nor does it somehow lose efficacy when we cross national borders. Further, the validity of the ART model to perform an assessment of an individual's exposure is supported by: (1) federal court case law holding that the ART model passes *Daubert* because it is reliable and appropriate for individual worker exposure assessments, (2) peer-reviewed scientific literature, (3) Dr. Herrick's own extensive experience with the ART model, and (4) Defendants' own citation to study authors who support Plaintiffs.

Case Law -- At least one federal court has performed a *Daubert* analysis of the validity and reliability of using the ART model to assess an individual's exposure to benzene from mineral spirits and found that it passed *Daubert* scrutiny. *Milward v. Acuity Specialty Products Group, Inc*., 969 F. Supp. 2d 101, 108 (D. Mass. 2013), *aff'd sub nom. Milward v. Rust-Oleum*

[5] Defendants also argue that the ART model is not "generally accepted in the relevant scientific community for individual retrospective exposure assessments" (Doc. 201 p. 10), as opposed to a group of individuals or facilities. It is unclear whether Defendants are attempting to exclude the continent of Europe from the scientific community with their choice of the word "relevant" scientific community. The ART exposure assessment model is not merely a "European model" (Doc. 201 p. 11) as asserted by the Defendants. As Dr. Herrick explains in his Declaration, attached as Exhibit 1, European Community regulations do require manufacturers and sellers of products into that market to use the ART model to predict worker exposures. However, the ART model is more than just a regulatory device. In fact it is actually a more modern refinement of the near field/far field model that has long been used by the industrial hygiene community to assess exposures. The ART model is based on a conceptual framework following a source-receptor approach. The source-receptor approach which acts the foundation for what evolved to the current tools known as ART is well-established and approved. For example, the source-receptor approach was applied in the context of a series of benzene exposure industrial hygiene and epidemiology studies conducted by a consortium of oil companies for the very purpose of modeling individual worker exposures. *See* Herrick Decl.

Corp., 820 F.3d 469 (1st Cir. 2016). There, the District Court of Massachusetts ruled on a benzene defendant's *Daubert* motion founded on the same criticisms of the ART model presented by Safety-Kleen and U.S. Steel. The *Milward* plaintiff developed AML from exposure to benzene in solvents and paints used in the workplace. His benzene exposure including from mineral spirits was modeled with the ART program by Dr. Herrick's colleague at Harvard University, James Stewart, CIH. *Id*. at 105-06. Like Safety-Kleen and US Steel here, the defendants in *Milward* argued that the ART model was developed to model exposures for groups of workers, or workplaces, in Europe and was not an accepted method for modeling exposures sustained by individuals in the United States. The *Milward* defendants cited some of the same articles to criticize the ART model as Safety-Kleen and US Steel cite here. *Id*. at 106-07 (Citing articles). Like Safety-Kleen and US Steel, the *Milward* defendants claimed that the unreliability of the ART model was demonstrated by the fact that it purportedly overestimated the plaintiff's benzene exposure by a factor of 2.92. *Id*. at 107.

The *Milward* court conducted a thorough review of the ART model and its application to assess the exposures. The court rejected the defendants' arguments and found the ART model to be a reliable method for assessing a worker's exposure to benzene from mineral spirits:

> I thus find Stewart's exposure assessment using the ART admissible under Rule 702. The ART is peer-tested and produces fairly reliable exposure estimates. Concerns about over-estimation are apparently present in many exposure models, and individual assessment without actual exposure data may be particularly difficult. But these are concerns going to weight rather than admissibility; they call for closer scrutiny by the factfinder as to estimated input parameters and adjustment of the resulting exposure estimate as necessary, but do not require exclusion of the evidence altogether.

Id. at 108.

Literature -- The ART model enjoys general acceptance among the scientific community, and its use to assess an individual's exposure in the United States is the subject of peer-reviewed scientific articles. In 2018 and 2019 the EPA published exposure assessment guidelines for the scientific community which recommend the ART model as among the best, and most modern, scientific methods in use at the agency for assessing exposures. *See* Herrick Declaration. Various peer-reviewed scientific articles have used the ART model to assess both group and individual exposures in various regions One recent publication concluded that "**ART was generally found to be the most accurate and precise model, with a medium level of conservatism.**"[6]

A 2017 study evaluated the accuracy and the robustness of different exposure models including ART, comparing measured data in occupational exposure scenarios involving the use of organic solvent and pesticides. In this study, ART was found to be the most accurate model among others, even if the model tended to underestimate exposure to pesticides. ART was the most accurate regarding organic solvent exposure scenarios.[7]

Similar results were reported in a 2018 paper that evaluated the performance of three models, one of which was ART, comparing model estimates and exposure measurements for solvent cleaning tasks. In this study, ART was found to be the most accurate and precise model.[8]

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[6] Spinazzè, A.; Borghi, F.; Campagnolo, D.; Rovelli, S.; Keller, M.; Fanti, G.; Cattaneo, A.; Cavallo, D.M., How to obtain a reliable estimate of occupational exposure? Review and discussion of models' reliability, Int. J. Environ. Res. Public Health 2019, 16, 2764 (From a total of 21 studies on external validation, sensitivity and robustness, the authors concluded that "ART was generally found to be the most accurate and precise model, with a medium level of conservatism."), available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6695664/pdf/ijerph-16-02764.pdf.

[7] Spinazzè, A.; Lunghini, F.; Campagnolo, D.; Rovelli, S.; Locatelli, M.; Cattaneo, A.; Cavallo, D.M. Accuracy Evaluation of Three Modelling Tools for Occupational Exposure Assessment. Ann. Work. Expo. Health 2017, 61, 284–298. https://www.ncbi.nlm.nih.gov/pubmed/28355416. See the abstract, noting that "ART was the most accurate model."

[8] Lee, S.; Lee, K.; Kim, H. Comparison of Quantitative Exposure Models for Occupational Exposure to Organic Solvents in Korea. Ann. Work Expo. Health 2018, 63, 197–217. https://www.ncbi.nlm.nih.gov/pubmed/30445617. From the abstract: "We found ART to be the most accurate model, and Stoffenmanager was the most balanced

In 2013, scholars evaluated the performance of the ART model in occupational scenarios. The model estimates aligned with experimental results, thus proving its suitability as a model.[9]

Herrick's experience -- Dr. Herrick himself has extensively used the ART model to assess individuals' exposures, including in the context of a series of benzene epidemiology and benzene exposure studies conducted by a consortium of oil companies in China. Herrick Decl. 10, Ex. 1. He has also taught students at the Harvard University School of Public Health to use the program in this manner. Herrick Decl. ¶16. Federal courts consider an expert's professional experience implementing a method to be sufficient, in and of itself, to establish the method's reliability. *McCullock v. H.B. Fuller Co.*, 61 F.3d 1038, 1043 (2d Cir. 1995) (on this basis affirming district court's admission of medical expert testimony despite the fact that the expert "could not point to a single piece of medical literature" that specifically supported opinion).

Dr. Herrick explains that "the ART model is actually a more modern advancement of the near field/far field model that has long been used by the industrial hygiene community to assess worker exposures." Herrick Decl. ¶10. The ART model is founded in an approach to exposure modeling that was applied in a series of benzene exposure industrial hygiene and epidemiology studies conducted by a consortium of oil companies for the very purpose of modeling individual worker exposures. Herrick Decl. ¶10. These studies have collectively been referred to as the Shanghai Health Study. Herrick Decl. ¶10.

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model in terms of good accuracy, high correlation, and medium conservatism in the model predictions…. Therefore, our findings suggest that these European models can be used to predict occupational exposure to solvents in Korea."

[9] Hofstetter, E.; Spencer, J.W.; Hiteshew, K.; Coutu, M.; Nealley, M. Evaluation of recommended reach exposure modeling tools and near-field, far-field model in assessing occupational exposure to toluene from spray paint. Ann. Occup. Hyg. 2013, 57, 210–220. https://www.ncbi.nlm.nih.gov/pubmed/23002273. From the abstract: "The higher tiered Advanced REACH Tool and NF-FF models showed greater concordance with experimental results, overestimating the TWA exposure by a factor of 2.92 and 1.96, respectively. In conclusion, the Tier 1 and 2 exposure modeling tools performed as expected for the simulated exposure scenario, providing relatively accurate, though conservative, estimates according to the level of detail and precision accounted for in each model."

As explained by Dr. Herrick, numerous investigators have conducted side-by-side comparisons of the performance of ART and other exposure assessment tools, and found ART to be superior, including for assessing an individual's exposures to benzene:

> ART results were also found to compare well with exposures measured on individuals, especially for organic vapors (such as benzene) [citing Savic N, et al., (2017)]. In a comparison of ART and two other modeling tools with measured exposure levels, ART was found to be the most accurate model, especially for organic solvents (such as benzene) [citing Spinazzè A, (2017)]. A comparison of ART with exposures measured over 7 types of industries found that ART tended to underestimate exposures to liquids by an average of about 0.5 mg/m3 [citing Landberg HE, (2017)].

Herrick Decl. ¶17.

Defendants' own experts -- The papers cited by Defendants and their expert Spencer include various study co-authors who in other work actually support Plaintiffs. For example, Defendants cite the McNally paper from 2014. (Def. Br. pp. 7-8, paper filed at Doc. 201-9). One of the co-authors of that paper was John Cherrie. In another, more recent paper from 2020, Cherrie and his co-authors agree that ART the model is "extensively documented in peer-reviewed scientific papers and associate technical reports" and summarize recent studies that "judged Stoffenmanager® to be the most robust model for REACH and ART to be the most accurate and precise model."[10] Likewise, Spencer cites a 2017 paper by Landberg. (Doc. 193-2, p. 37). But Landberg has published more recent papers vouching for the ART model. A 2019 study investigated different risk assessment approaches for exposure to chemicals in seven kinds of industries (wood, printing, foundry, spray painting, flour milling, chemical, and plastic

[10] John William Cherrie, Wouter Fransman, Gerardus Antonius Henrikus Heussen, Dorothea Koppisch and Keld Alstrup Jensen, Exposure Models for REACH and Occupational Safety and Health Regulations, Int. J. Environ. Res. Public Health 2020, 17, 383; doi:10.3390/ijerph17020383 (noting that ART model was "extensively documented in peer-reviewed scientific papers and associate technical reports" and that studies "judged Stoffenmanager® to be the most robust model for REACH and ART to be the most accurate and precise model").

molding). The results showed that the ART model erred on the side of safety. For relevant outcomes, the measured exposure exceeded the estimates in only 3% of the cases considered.[11]

Defendants argue that the ART model is not reliable for assessing Mr. Rhyne's benzene exposure because a single article by Koivisto (2019) states that "'[p]roperly applied physical mass-balance models appear to be stronger tools for case-specific exposure assessments' than the use of empirical models such as ART." (Def. Br. p. 8; article is filed as Ex. 10, Doc. 201-10). Essentially, Defendants argue that the near field/far field model is a better method than the ART program.[12] This argument fails as a matter of law and fact.

As to the law, "[t]he mere fact that the plaintiff's experts failed to perform testing in a manner that was satisfactory to the defendants does not compel the conclusion that their opinions do not meet the qualifications for expert testimony." *Stoots v. Werner Co*, No. 7:04CV00531, 2005 WL 3547122, at *5 (W.D. Va. Dec. 28, 2005). "[E]xperts in various fields may rely properly on a wide variety of sources and may employ a similarly wide choice of methodologies in developing an expert opinion." *Cooper v. Carl A. Nelson & Co*., 211 F.3d 1008, 1020 (7th Cir. 2000).

Defendants appear to contend that the model used by their expert (the near field/far field, NF/FF model) is more reliable and that the ART model, used by Dr. Herrick for certain products, including Safety-Kleen's parts washing solvent, purportedly overstates exposures. Def. Br. p. 23. This argument was also addressed by the Court in *Milward* when it found that:

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[11] Landberg, H.E.; Hedmer, M.; Westberg, H.; Tinnerberg, H. Evaluating the Risk Assessment Approach of the REACH Legislation: A Case Study. Ann. Work Expo. Health 2019, 63, 68-76. *See also* Landberg, H. (2018). The Use of Exposure Models in Assessing Occupational Exposure to Chemicals. Lund: Lund University: Faculty of Medicine, p. 48 ("For ART, only 3 % of the measured exposures exceeded the modelled outcome. This result makes ART the model with highest level of protection, according to our data.").

[12] Plaintiffs do not claim that the near field-far field model is unreliable. The ART model, however, has advantages over the near field-far field model that make it a superior tool for certain applications.

> The Hofstetter study, however, found that the model employed by [Defendant's] expert—known as the Near Field, Far Field ("NF–FF") model—also overstated exposure by a factor of 1.96. The study thus reflects the unremarkable proposition that the ART, apparently much like the NF–FF model, is less precise when actual exposure data is unavailable. *Id.* at 10. The absence of actual exposure data is not fatal to the usefulness or reliability of either test. To the contrary, the ability to generate an exposure estimate in the absence of such data is part of the value of the ART to the scientific community. Tielemans, *Advanced REACH Tool,* at 950.

Milward, 969 F. Supp. 2d 101, 107.

As to the facts, Defendants misstate the Koivisto article and ignore the fact that the ART model has actually been proven to be the more accurate method for assessing benzene exposure under the exact facts that apply to this case. Koivisto examined the application of the ART model to *aerosolized* solvents -- a fact made obvious by the paper's title.[13] Safety-Kleen's machine used a *liquid* solvent, not an aerosol. Koivisto is inapplicable on this basis alone.

Directly on point to evaluating the ART model in this case is the LeBlanc (2018) article (Doc. 201-11), discussed in greater detail *infra*. When asked at his deposition whether properly applied physical mass-balance models were stronger than the ART model, Dr. Herrick flatly rejected that claim, and pointed to the LeBlanc article as evidence that the ART model more accurately models benzene exposure from mineral spirits than the near field/far field physical mass-balance model. Herrick dep., 165:1-13, Exhibit 13.

The LeBlanc study authors modeled benzene exposure from a Safety-Kleen style parts washing machine using both the ART 1.5 program[14] and the near field/far field model. They then compared the results to actual air monitoring from the Fedoruk (2003) study to validate the

[13] "Source specific exposure and risk assessment for indoor aerosols." Doc. 201-10.
[14] This is the same version of the ART program used by Dr. Herrick.

accuracy of both models.[15] The authors concluded that the ART 1.5 program more accurately modeled the benzene exposure than did the near field/far field model.[16]

Defendants mischaracterize the ART model as a rigid tool with pre-programmed exposure scenarios, which can only be used to model exposures for the specific scenarios that already exist within the tool. *See, e.g.*, Doc. 201 at p. 8, citing to the Schinkel (2014)[17] article for the proposition that "ART has a highly particularized and specific utility." This is not true and is contradicted by how Dr. Herrick actually used the program for modeling Mr. Rhyne's exposures. Defendants argue that the ART model cannot be used for Mr. Rhyne because there are no pre-programmed settings for benzene exposures from a parts washing machine at a nuclear power plant. Contrary to Defendants' suggestion, the ART model is designed to permit the user to tailor the program to an individual's use of a specific product, in a specific manner in a specific environment.

While the ART program can be used to apply predetermined exposure scenarios, this is not the only way it can be employed. The ART model can also be tailored to an individual's specific exposures. Dr. Herrick used the model using the evidence of Mr. Rhyne's specific use of the Safety-Kleen parts washer and the environmental conditions at Duke. Dr. Herrick input various parameters specific to Mr. Rhyne into the ART model. These parameters included (1)

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[15] *See* LeBlanc Study, Doc. 201-11, at 3.

[16] *Id*., at 6.

[17] The objective of the Schinkel article was not to determine whether the ART model can be used to assess an individual's exposure. Herrick Decl. ¶15. Rather, the Schinkel article evaluated the consistency between model outcomes when 54 exposure assessors used an older version of the ART model (version 1.0), and what factors influenced the consistency of the results. The authors found that the inter-assessor consistency of the ART exposure modeling was influenced most by the degree of the assessor's training on the use of the program, the assessor's experience with industrial and occupational hygiene, and the clarity of of the program's guidance document, i.e. training manual. Importantly, the authors found that the ART program worked better when the assessors had more details available to them regarding the exposure scenario. This indicates that the ART model is capable of accounting for individual exposure scenarios.

adjusting the model to four separate exposure activities (i.e., scrubbing parts in the liquid, soaking parts, spraying parts with air, soaking parts), (2) the surface area of the parts washing machine, (3) the length of time that Mr. Rhyne used the parts washer during each activity, (4) the liquid temperature, (5) the room size, (6) the ventilation conditions, (7) the presence or absence of engineering controls, (8) whether the work was performed indoors or outdoors, and others. Doc. 201-2, Herrick report, Appendix, ART Report -- Benzene from Parts Washing, p. 54 of 94.

Modeling exposure to a specific individual's activities and working environment and the subject product is a far more accurate and precise way to assess exposure.[18] Here the objective is to know what Mr. Rhyne's benzene exposure was from Mr. Rhyne's use of the parts washer. Applying data for how Mr. Rhyne himself was exposed to the parts washer is a far superior method to assessing exposures at nuclear power plants generally.

2. The ART Model is Generally Accepted for Individual Exposure Assessments.

Numerous scientific articles support the use of the ART model for individual exposure assessments. See studies cited above; *Milward,* 969 F. Supp. 2d at 107.[19] Dr. Herrick explains:

> The allegation that the ART model is inapplicable to exposure assessments such as Mr. Rhyne's benzene exposures is a canard. The scientific basis for using ART in exposure estimation is well-established. A review of the literature (PubMed) shows that as of today there have been 33 peer-reviewed articles published on the development and use of ART, and the number of publications has grown steadily each year signifying its adoption as an exposure assessment tool. Notably, these publications include studies that evaluated the determining accuracy and robustness of ART modeling results by comparison with exposure measurements by NIOSH in US facilities.

[18] It is true that the ART model does permit the user to model exposures based on a general type of workplace, i.e., a typical refinery. That function may be useful when attempting to predict exposures to large groups of workers in various refineries when the industrial hygienist does not have details about how specific people used specific products in specific refineries.

[19] "[Defendant] also argues that the ART may be inappropriate for retrospective exposure assessment of a single individual, as opposed to a group of individuals or facilities.... But even a study that Rust-Oleum references to highlight uncertainty in the ART discusses use of the model for individual assessment, provided that the wide variability in exposure between workers is taken into account." *Id.*, referring to Jody Schinkel, et al., Advanced REACH Tool (ART): Calibration of the Mechanistic Model, 13 J. Envt'l Monitoring 1374, 1379 (2011).

Herrick Decl. ¶17, Ex. 1.

The United States Environmental Protection Agency ("EPA") lauds the ART model as being among the "best science" of exposure assessment models. In its updated Exposure Factors Handbook, the EPA lists the ART model as among "[l]eading examples of indoor air models…." Herrick Decl. ¶ 13, citing EPA Exposure Factors Handbook, at p. 19-19. In October 2019, the EPA published its Guidelines for Human Exposure Assessment in order to "incorporate advances in exposure assessment reflecting the best science currently conducted across the Agency in all offices, programs and regions." Herrick Decl. ¶ 13, citing EPA Guidelines, p. xi.[20] The Guidelines are intended "to aid exposure scientists in preparing exposure assessments… and conducting epidemiology studies." *Id*. The EPA describes the ART model as an "improved exposure assessment model[]". Herrick Decl. ¶13, quoting EPA Guidelines, p. 21. The EPA does not restrict the use of the ART model to Europe or to population-wide or workplace-wide analysis.

Dr. Herrick himself was one of four authors on the LeBlanc (2018) article which proves that the ART model generates a more accurate assessment of benzene exposure from the Safety-Kleen style parts washer than the near field-far field model that Safety-Kleen and US Steel advocate here. *See*, Doc. 201-11. Defendants argue that the LeBlanc article demonstrates the novel nature of the ART model because it states that it reflects the first time that the model was applied in a peer-reviewed article to assess exposure to benzene from mineral spirits-based parts washing solvent. This is baseless. Simply because the model was not in a peer-reviewed

[20] Available at https://www.epa.gov/sites/production/files/2020-01/documents/guidelines_for_human_exposure_assessment_final2019.pdf.

article for that precise product before does not negate its validity. And several studies have applied ART to solvent and benzene exposures. Indeed, *Milward*, allowing a similar expert under *Daubert* in a benzene case was published five years (2013) before the LeBlanc (2018) article. Defendants' logic would mean that every time an established method is applied to a new item, the method reverts to being a novel method. Such an interpretation of *Daubert* is nonsensical and impractical.

Defendants cite to the Tielemans (2011) article for the proposition that the ART model is a work in process. (Doc. 201 p. 10). Defendants impugn ART as a not fully developed method. This argument is easily dispensed with. The Tielemans (2011) article is nine years old. As with most technology, the ART program has progressed. Defendants' argument is like saying Apple's iPhones or Microsoft programs are novel and unreliable because the company periodically manufactures new models. Simply because a method evolves and improves with modern technology does not mean it has not been generally accepted.

B. Dr. Herrick's Data Inputs Regarding Exposures Are Supported By The Evidence.

Defendants make a collateral attack on Dr. Herrick's assessment of exposure to unrelated products. (Doc. 201 p. 12). Defendants' disagreements are matters for cross-examination, not *Daubert* exclusion. *See Kristensen v. Spotnitz*, No. 3:09-CV-00084, 2011 WL 4380893, at *11 (W.D. Va. Sept. 21, 2011) ("To the extent that Defendants' experts disagree with Vilseck's methodology or conclusions, Defendants are free to elicit that testimony."); *Milward,* 969 F. Supp. 2d at 107-08 (noting that "questions about the proper input parameters are questions about the factual underpinnings of the opinion, which are matters going to weight rather than admissibility").

Defendants seek to undermine Dr. Herrick's opinion by arguing that Mr. Petty did not assess exposure to CRC 3-36 and this Court found that there was inadequate evidence of the exposure to the specific CRC product Mr. Rhyne used. Doc. 180 at p. 7.[21] Mr. Petty's failure to include the CRC 3-36 exposure in his report because he "couldn't identify the specific cleaner that he used" is explained by the fact that the McGuire Approved Chemicals List was not available for Mr. Petty's review when he wrote his report. *See generally* Petty report, Doc. 201-13. Though that list did not precisely identify what products that Mr. Rhyne personally used (nor does Dr. Herrick claim it does), Dr. Herrick concluded that Mr. Rhyne's testimony describing the product allowed him to link it to the CRC 3-36 product on the list.[22]

Even as they criticize Dr. Herrick because he *did* include information related to CRC's 3-36 product (on the 1992 chemicals list), they insist he made "a gross misrepresentation" because he *did not* include Tap Magic or Spot-Check (also on the list). (Def. Br. at 14-15). There are several types of Tap Magic Cutting Fluid, some without benzene. The chemicals list does not state the exact type used. Mr. Rhyne did not provide details on these products, such as the container color. *See* Rhyne dep. p. 103 (Exhibit 4). Mr. Rhyne testified that he used "very little" of the Spot-Check product. Herrick report p. 35, Doc. 201-2.

Defendants' argument is completely unrelated to the exposure analysis of their own products. They quibble with Dr. Herrick's choice to exclude collateral products from his

[21] Defendant CRC misrepresented that Mr. Rhyne did not work at McGuire in 1992 because he only worked at Catawba. In fact, he worked at more than one site for instance during outages. CRC's claim that Mr. Rhyne worked at Catawba in 1992 and not at McGuire omitted key testimony. In fact Mr. Rhyne testified that from 1985 on, every 18 months he left Catawba to work on outages at McGuire. During each outage he spent 18 to 30 days at the McGuire plant. Bruce Rhyne dep. 94:16-95:10; 292:11-297:15 (Exhibit 4).

[22] Specifically, he testified that, "when I got the Approved Chemical List, ... that was one of the things I looked for, was to see if I could identify a particular CRC material that he used, and, in fact, there was one included in the list … as I look through this, I'm pretty sure I remember that this was the only CRC product that was identified ... in this list. So that's what I did to conclude that that's what he used." Herrick Dep. at pp. 24-26, Doc. 201-3.

analysis, which he did because he concluded in his professional judgment that there was not enough testimony for foundation. None of this goes against the reliability of Dr. Herrick's scientific methodology. Defendants will be free to cross-examine him on these issues at trial.

In short, there are numerous types of Tap Magic and Spot-Check, not all of which have benzene. Dr. Herrick concluded that he did not have sufficient information to determine what type Mr. Rhyne used. With respect to CRC 3-36, Dr. Herrick assessed Mr. Rhyne's description of the product along with the Approved Chemicals List information as being adequate. This is acceptable methodology, with Dr. Herrick independently doing his own analysis.

Defendants complain that the inclusion of the CRC 3-36 product in the exposure assessment inflates the cumulative dose. But first, the assessment of exposure to benzene from CRC 3-36 in no way changes Dr. Herrick's assessment of exposure from the Safety-Kleen parts washing solvent or from Liquid Wrench. Second, the CRC 3-36 product's contribution to Mr. Rhyne's total exposure was small in comparison to the contribution of the Safety-Kleen parts washer and Liquid Wrench. *See* Herrick report p. 43, Doc. 201-2 (showing relative contributions). Third, Mr. Rhyne's exposure to benzene from the Safety-Kleen solvent and Liquid Wrench were far above the exposures that opined as sufficient to cause AML. *See* Dr. Herrick's report, Doc. 201-2, at pp. 41-44; Deposition of Dr. Robert Harrison, Doc. 194-3, at 44:19-45:20. Thus, the added exposure from CRC had no effect upon the experts' causation opinions.

Defendants argue that by not including Spot-Check or Tap Magic exposures, Dr. Herrick inflated their relative portion of the total exposure. This is beyond disingenuous where their own industrial hygienist, Spencer, like Herrick does not ascribe exposure contribution to either

product. *See* Spencer report, Doc. 193-2. And unlike the Safety-Kleen solvent and Liquid Wrench that Mr. Rhyne used with great frequency, as much as four hours per day, Mr. Rhyne testified that he used "very little" of the Spotcheck and there is no evidence that the version of the Tap Magic he used contained benzene. *See* Spencer report, Doc. 193-2, p. 3, citing Rhyne depo. Ex. 4, pp. 73-74; *see also* Herrick report, Doc. 201-2, at pp. 30-31.

At best, Defendants have a disagreement with Dr. Herrick's conclusion regarding his input parameters of the two irrelevant unrelated products.[23] There is "no authority rigidly requiring that an expert review all relevant information in a case in order to have his or her testimony admitted into evidence." *SEC v. Johnson*, 525 F. Supp. 2d 70, 75 (D.D.C. 2007). "Indeed, Federal Rule of Evidence 705 specifically 'eliminates the prior practice of requiring an expert to set out, specifically, the facts and data underlying an opinion before allowing the expert to testify.'" *Id*. at 75-76 (citing *Ambrosini v. Labarraque*, 101 F.3d 129, 132 (D.C. Cir. 1996)). An expert's purported "failure" to consider the factors defense counsel believes important is not a ground for excluding his testimony; instead, "it provides subject matter for cross-examination." *Id*. at 76.

Simply providing a "laundry list of factors" allegedly missed by an expert does not, by itself, suggest that the expert's methodology is unreliable. *Tilstra v. Bou-Matic, LLC*, 2014 WL 4662483, at *7 (W.D. Wis. Sept. 19, 2014) (holding that factors "all affect the weight" of the expert's opinion, not the reliability of the "method to calculate the result he reached"). Absent a significant link to the reliability of the expert's methodology, Defendant's criticisms are no basis

[23] Safety-Kleen asserts that Dr. Herrick "ignored" self-testing data of their mineral spirits that they produced. (Doc. 201 pp. 17-18). In fact, this was information that Dr. Herrick reviewed and considered, and did not simply summarily "ignore." Herrick report, Doc. 201-2, pp. 24-25 (citing "analysis conducted on a sample of mineral spirits and reported to Safety-Kleen in December 1980"). This information is clearly referenced in his expert report, and for Safety-Kleen to assert otherwise is a falsehood.

for exclusion. *E.g., Phillips v. Raymond Corp*., 364 F. Supp. 2d 730, 745 (N.D. Ill. 2005) ("[Plaintiff's] quarrels with [expert's] inclusion or rejection of certain factors or calculations (such as grip strength), implicate his conclusions and are thus properly left for exploration through cross-examination.").

C. Dr. Herrick's Opinions on the Benzene Content of Safety-Kleen's Parts Washing Solvent are Reliable and Satisfy *Daubert.*

Defendants fault Dr. Herrick for (1) relying, in part, on the Fedoruk (2003) study as evidence of benzene exposure from Safety-Kleen's parts washing solvent, (2) not relying on Safety-Kleen's limited testing of used solvent that is not specific to Mr. Rhyne's workplace, and (3) not relying on a biased, unpublished NMAS air monitoring study performed by Safety-Kleen's litigation consultant for Safety-Kleen's insurers. Dr. Herrick utilizes extensive and reliable evidence of the benzene content of mineral spirits, which encompasses the benzene-containing parts washing solvent sold by Safety-Kleen. Dr. Herrick's exposure assessment conservatively uses a much lower mineral spirits benzene content than what is published in the peer-reviewed literature and by the United States Government. Dr. Herrick also appropriately considered and accounted for the evaporative loss of benzene from mineral spirits.

1. Evidence of the Benzene Content of Mineral Spirits Used By Dr. Herrick.

The benzene content of the materials known as Varsol, petroleum distillate mixtures (mineral spirits, Stoddard Solvent, VM&P naphtha, and other petroleum-derived solvents) has been extensively investigated. Some have reported ranges in benzene content from 1,000 to 10,000 ppm, while others have maintained that levels have been below 100 ppm since the late 1970s. *See* Herrick report, Doc. 201-2, pp. 24-25. Dr. Herrick *did consider* the one analysis conducted on a sample of mineral spirits by Safety-Kleen in December 1980, in which the

laboratory results reported that the benzene content was 0.027 milligrams per milliliter (mg/ml) using a typical density of 825 grams per liter (g/L) for the liquid degreaser, which is converted to 32.7 milligrams per kilograms (mg/kg) or 32.7 ppm by mass for the benzene content of this sample analyzed in 1980. *Id*. However, other sources summarized by Kopstein (2011) maintain that until at least 2000, the benzene content of regular mineral spirits has ranged from 1,000 up to 10,000 ppm. *Id*.

Dr. Herrick's report describes testimony to OSHA by Caliboume D. Smith, who was Environmental and Training Manager for the Du Pont Company. *Id*. at 25. Mr. Smith stated that there are no benzene-free substitutes for solvents, and that hexane, petroleum-naphtha, low flash VM&P and toluene characteristically may contain larger amounts of benzene as impurities. *Id*. Some of DuPont's suppliers could only assure that the benzene level was between 0.1 to 0.5% (1,000 to 5,000 ppm) in these solvents. *Id*. Hunting (1995) described Varsol as containing 1% benzene. *Id*. A 1987 Texaco material safety data sheet for mineral spirits reported that it contained 0.01 to 0.09% benzene. *Id*. A 1980 study by the Southwest Research Institute of benzene concentrations at several distances from open containers of mineral spirits concluded that the highest eight-hour air concentration in the vicinity was 0.02 ppm. *Id*. at 25. At higher temperatures, however, benzene concentrations ranged from 2.7 to 5.3 ppm at a distance of six inches. *Id*. Another factor in emissions from parts washers is the depletion of the benzene content over time. *Id*. A 2008 study by Williams et al. estimated that the mass of benzene remaining in a parts washer reduced by about two-thirds over a five-day period in which it was used eight hours a day. *Id*.

The ART exposure modeling approach has been applied to parts washing with mineral spirits, and the resulting benzene exposure estimates have been compared to several other sources of measured, and estimated benzene exposures. *Id*. at 26. In the peer-reviewed 2018 publication which Dr. Herrick co-authored with three other scholars (copy filed at Doc. 201-11), the ART 50th percentile TWA exposure estimates were closer to the measured exposure values than the other modeling approaches. Dr. Herrick thus considered the ART modeling approach to be suitable to estimate Mr. Rhyne's benzene exposures while using mineral spirits. *Id*. Defendants' argument that Dr. Herrick chose benzene rather than mineral spirits is immaterial. Dr. Herrick is evaluating Mr. Rhyne's exposure to benzene in mineral spirits, not assessing his exposure to mineral spirits as a chemical separate and apart from its benzene content. Thus, his selection of benzene as the ART input parameter for measurement was appropriate.

In modeling Mr. Rhyne's benzene exposure from use of the parts washer, Dr. Herrick conservatively used the same value of 58 ppm benzene from the LeBlanc et al. paper, which is the same value reported by Fedoruk et al. (2003) as well. Doc. 201-2 at 26-27. On days when Mr. Rhyne used a parts washer for a period of one hour, his predicted 50th percentile exposure for the period was 7.1 mg/m^3, with an interquartile confidence interval of 3.7 to 14 mg/m^3 (median 2.2 ppm, range 1.2 to 4.4 ppm). *Id*. at 27. The reports of the ART models including input and output values from the models are included in the Appendix to his report. Doc. 201-2.

Dr. Herrick reports that these results are in "good agreement" with published investigations and summaries of benzene exposures from mineral spirits parts washing. *Id*. at 26. The Fedoruk study measured the emissions and resulting exposures to benzene from a parts washing machine using mineral spirits as the solvent. *Id*. The solvent used was a recycled

degreaser solvent that contained either 9 or 58 ppm benzene. *Id*. An experimental protocol simulated parts washing, including soaking, spray rinsing, brushing, compressed air spraying and inspecting metal parts cleaned in the washer. *Id*. Sixty-minute duration air samples intended to represent the upper bound of exposures showed a personal exposure in the operator's breathing zone of less than 33 parts per billion (ppb) for the 9 ppm benzene content solvent. *Id*. An area sample taken over the degreaser showed an airborne benzene concentration of 33 ppb (0.033 ppm). *Id*. When the 58 ppm benzene content solvent was used, the personal exposure was measured at 440 ppb benzene while the corresponding breathing zone area sample was 550 ppb. *Id*. Dr. Herrick used the same value for benzene content of used mineral spirits as did Fedoruk. However, he modeled Mr. Rhyne's exposure at a room temperature of 25 degrees Celsius (77 °F), as more representative of his working conditions in North Carolina than the indoor air temperatures of 65 to 68 °F used by Fedoruk. *Id*. One can reasonably expect the vapor emission rates and associated exposure concentrations to approximately double for every 10 °C (18 °F) increase in temperature. *Id*. Considering this temperature difference, the agreement between Fedoruk's values and the exposure estimated for Mr. Rhyne is very good. *Id*. at 26-27.

Dr. Herrick also cites the 2008 Williams paper which reviewed a series of studies of vehicle mechanics including the use of mechanical parts washers in a variety of facilities. *Id*. at 27. The mean of short-term (one minute) airborne benzene samples was 0.45 ppm on initial sampling, and 0.27 ppm on follow-up. *Id*. Mr. Rhyne used mineral spirits parts washers in his high school classes, his work at Setzer's Automotive, and at Duke Power. *Id*. On days when he used the parts cleaner for a 15-minute period, his predicted benzene exposure for that 15-minute period was 5.2 mg/m^3, with an interquartile confidence interval of 2.7 to 10.0 mg/m^3 (median 1.6

ppm, range 0.8 to 3.1 ppm). *Id*. On days when he used a parts washer for a period of one hour, his predicted 50th percentile exposure for the period was 7.1 mg/m^3, with an interquartile confidence interval of 3.7 to 14 mg/m^3 (median 2.2 ppm, range 1.2 to 4.4 ppm). *Id*. The reports of the ART models including input and output values are included in the report Appendix.

There is no single benzene content of mineral spirits that applies to all mineral spirits, or even the mineral spirits of the same grade from the same manufacturer. Hence, manufacturers often report the benzene content of a single grade of mineral spirits manufactured as a range (e.g., 0.01 to 0.09% benzene). The benzene in mineral spirits comes from the crude oil that is used to refine mineral spirits. Thus, the content is influenced by the amount of benzene in crude oil. The refining processes can influence the mineral spirits' benzene content. Refinery equipment failures can increase the benzene content of the mineral spirits. Thus, even if the manufacturer and grade of mineral spirits is known, it is appropriate to account for a range of possible benzene contents.

Defendants argue that the Fedoruk study cited by Dr. Herrick reports a benzene content of 9 ppm and claims that Dr. Herrick should have used this benzene content. (Doc. 201 at 17). Defendants fail to tell the Court that the mineral spirits used in the Fedoruk study was "recycled parts washing solvent" sourced from southern California in or around 2003.[24] This is significant because California has unique air quality regulations that require the use of Rule 66 mineral spirits. (Doc. 201-2, p. 25). Rule 66 does not apply to North Carolina.

[24] *See* Doc. 201-17, Fedoruk study, abstract (noting the "first simulation was performed with recycled solvent (9 ppm benzene in solvent)"), and p. 765 ("The degreaser exposure studies were conducted in a warehouse facility in the greater Los Angeles area."). The lead author, Marion Fedoruk was formerly employed by Safety-Kleen. It is Safety-Kleen's business to recycle mineral spirits based parts washing solvent.

Defendants point to how the Fedoruk study added benzene to ("spiked") the recycled mineral spirits to increase the benzene content to 58 ppm. (Doc. 201, p. 17). Absent is an explanation of why. Fedoruk spiked the recycled mineral spirits to a level of 58 ppm benzene to represent a more realistic benzene content of the product.[25] If 9 ppm benzene was the typical benzene content of Safety-Kleen's parts washing solvent, they would not have added more benzene to raise the level to 58 ppm. Indeed, Safety-Kleen essentially admits that 9 ppm is not a realistic benzene content of its parts washing solvent in North Carolina by pointing to testing from its South Carolina recycling center with higher benzene contents. Doc. 201, p. 18.

Stated differently, the mineral spirits were "spiked" not gratuitously but for accuracy to national historic norms. Fedoruk used low-benzene content mineral spirits sourced from Southern California and formulated for California's strict air quality regulations. Thus the benzene was added to reflect mineral spirits within the range of more typical benzene content. Dr. Herrick thus properly compared the used parts washing solvent at issue in Fedoruk with the mineral spirits Mr. Rhyne was exposed to. Thus, these arguments are misplaced.

Therefore, it is clear that Dr. Herrick's methods in selecting the benzene content of mineral spirits for use in his assessment and ART calculation is grounded in the science, literature, and evidence, and are scientifically valid. Further, Defendants' arguments with relation to flaws in his methodology and selection criteria are misguided and incorrect, and certainly do not warrant preclusion of Dr. Herrick for the reasons stated above.

2. The Lexington, South Carolina Test Results are of Limited Relevance.

[25] *See* Doc. 201-17, Fedoruk study, pp. 764-65 (noting that "[t]he purpose of the current study is to examine the benzene emissions and exposure concentrations for workers using or working in the vicinity of a commercial degreaser station supplied with recycled mineral spirits solvent").

Safety-Kleen operated a recycling center in Lexington, S.C. that received waste solvents from thousands of customers. There is no evidence that the Lexington, S.C. facility received waste solvent from the Duke facilities where Mr. Rhyne worked. Assuming that Duke's waste did go to Lexington, there is no evidence that any of the test results submitted by Safety-Kleen were tests of solvent from a Duke facility, let alone one those where Mr. Rhyne worked.

Even assuming that the Lexington testing *was* performed on Safety-Kleen waste from the Duke plants Mr. Rhyne worked at, there is no evidence that the solvent was in the same condition as when he used it. Safety-Kleen itself argues that benzene can evaporate from its solvent over time. Safety-Kleen does not establish how much time elapsed between the point solvent left a customers' facilities and the point it was tested. Safety-Kleen offers no evidence of how much benzene evaporated from the solvent after it left customers' facilities. Safety-Kleen also fails to demonstrate that the manner with which it transferred the solvent from 30 gallon drums at the Duke plant to its trucks, to its storage tanks and to yet another truck to transport it to the recycling facility did not cause a reduction in the benzene content.

Safety-Kleen claims that the benzene content of its parts washing solvent is reduced by 50% after five days. Logically, if Safety-Kleen found 12 to 32 ppm benzene in the waste solvent after an unknown number of days passed between collection and testing, the benzene content must have been significantly higher when actually used by the customer. Safety-Kleen also cannot ask this Court to assume that the limited Lexington testing data accurately represents the solvent's benzene content when Safety-Kleen admits that customer use of the product altered its composition over time.[26] Safety-Kleen documents demonstrate that spent parts cleaning solvents

[26] Safety-Kleen itself stated that it was "on the verge of losing control" over its solvent stream quality because of contamination over time. SAL SK 6221-6223, Safety-Kleen Memo, "Solvent Contamination – A Major Problem" (Exhibit 5); SAL SK 07273 (Exhibit 6). Safety-Kleen knew that the addition of gasoline, Liquid Wrench and other

contained more than 0.1% benzene.[27] Safety-Kleen documents demonstrate that only 100 ppm benzene in liquid mineral spirits would release 40 ppm benzene into the air.[28]

3. The NMAS Air Monitoring Study Has Little Weight.

Safety-Kleen points to a National Medical Advisory Service study. (Doc. 201, pp. 18-19). The NMAS study was air monitoring conducted for Safety-Kleen's insurance company defending benzene exposure claims.[29] The air monitoring was performed by John Spencer, Safety-Kleen's expert in this and dozens of other benzene cases. The test was biased. Additionally, there is no evidence that the testing was intended to represent a typical worker's benzene exposure, as opposed to being substantially influenced by the conditions where the testing was performed.

D. Dr. Herrick Did Properly Apply The ART Model.

Safety-Kleen argues that (1) Dr. Herrick admitted that the ART program does not permit him to model exposure to one product, and (2) he should have modeled exposure to mineral spirits even though the issue in this case is Mr. Rhyne's exposure to benzene. Def. Br. pp. 20-22. Both claims are untrue. The second argument, in addition to being untrue, is simply absurd. Dr.

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solvents with high benzene content to its parts washers likewise increased the benzene content. Safety-Kleen Memo, "Benzene in Fuels," July 7, 1989 (Exhibit 7); SAL SK 5678-5679, Safety-Kleen Memo, "Summary Report on Portable Sensors For Use In Detecting Mineral Spirits Contaminated With Gasoline" (Exhibit 8); James Breece, Ph.D. deposition, dated September 21, 2007, at 264:3-12 (Exhibit 9).

[27] Draft Operational Health Risk Assessment, Safety-Kleen Recycling Center, Sept. 29, 1997 (Exhibit 10).

[28] Bates 100581-100591, Safety-Kleen Memo, April 1, 1992, "Virgin Parts Washer Solvent" (Exhibit 11).

[29] See NMAS study, Doc. 201-18, p. 1 (showing study was prepared for Safety-Kleen). NMAS is a for-profit firm, not a government agency or academic nonprofit. The NMAS website reflects that the group markets itself to "[e]mployers and workers' compensation insurance carriers." It provides "litigation support and expert testimony provides our insurance clients with a diverse and defensible array of claims consulting services." See http://www.nmas.com/.

Herrick modeled exposure to benzene because it is the benzene in the mineral spirits that caused Mr. Rhyne's AML. Modeling exposure to mineral spirits, in this case, is simply pointless.[30]

Safety-Kleen then argues that these two alleged, but untrue, errors are what caused Dr. Herrick's modeling of Mr. Rhyne's benzene exposure to be significantly higher than the Fedoruk study's air monitoring. But Safety-Kleen fails to tell the court the actual reasons why Mr. Rhyne's benzene exposures were higher than the concentrations measured by Fedoruk. The temperature of the solvent in the Fedoruk study was artificially low (63 degrees fahrenheit), and higher temperature means more exposure. Basic kinetics means that less benzene evaporates from a solvent the lower the solvent's temperature is. Dr Herrick opines that the parts washing solvent used by Mr. Rhyne was warmer than the solvent in the Fedoruk study. Doc. 201-2, p. 26.

Also, the Fedoruk study was conducted in a very large building with better ventilation than where Mr. Rhyne worked. Better ventilation can reduce benzene exposures. Mr. Rhyne described poor ventilation conditions where he used the Safety-Kleen parts washer.[31] This led Dr. Herrick to model his exposure with worse ventilation conditions than in the Fedoruk study.[32]

Defendants assert that "Dr. Herrick ... admits that his use of the European model does not allow him to isolate exposure results by product" which is "troubling" because "his report purports to separate the alleged exposures by product." (Doc. 201, p. 22). Defendants quote

[30] Safety-Kleen's own expert, John Spencer, CIH, models Mr. Rhyne's benzene exposure from the mineral spirits. When Safety-Kleen's insurance company hired NMAS and John Spencer, CIH to conduct air monitoring on Safety-Kleen parts washers, they monitored benzene exposure, not mineral spirits. Compare, Doc. 201-18 (NMAS study, co-signed by Spencer at page 86) and, 193-2 (Spencer expert report in this case).

[31] Doc. 201-2, p. 5 (Herrick report citing where in his deposition "Mr. Rhyne reported that the ventilation in the pipe shop wasn't good particularly during winter and he recalled having to sometimes go outside to take in fresh air because he would have difficulty breathing" and that "time cleaning parts in the Safety-Kleen parts washer in the fab shop").

[32] That the ART program permits the user to tailor a model to such finite detail as solvent temperature and ventilation conditions provides further evidence that the model is properly used to model an individual's benzene exposure.

only one sentence from Dr. Herrick's answer, intentionally omitting Dr. Herrick's explanation for why he included far field exposures. Dr. Herrick's true answer was that (1) it is possible to use the ART model to isolate the near field exposure (i.e., model solely the Safety-Kleen exposure), but (2) since Mr. Rhyne used the Safety-Kleen in a location where he was also exposed to benzene from products used around him, (3) the truest and most accurate way to assess his exposure was to include the far field sources of benzene as well.[33] In short, Dr. Herrick more accurately modeled exposure from all sources. Moreover, his decision to include the far field exposure is another example of how the ART model is capable of performing an individualized exposure assessment.

The ART model can be used to model solely the near field exposure or both the near field and the far field. Herrick dep pages, Exhibit 13, pp. 344-46. His Declaration clarifies how the ART model's input functions operate through a set of drop-down menus, allowing its user to select from a range of exposure scenario variables. Herrick Decl. 33, Ex. 1. One can choose a primary source that is within three feet of the worker's head, which is in effect his near field source. One can also choose a secondary source present in the workroom and more than three feet from the worker's head, i.e., a far field source. Finally, one can choose both, which is what Dr. Herrick did in his exposure assessment for Safety-Kleen. Herrick Decl. ¶33.

Dr. Herrick testified that when Mr. Rhyne used the Safety-Kleen parts washer, he could not rule out that there was also contribution from the far field. Herrick dep. 342:15-343:20,

[33] Defendant quotes a snippet: "I wasn't really trying to do the calculation in such a way that attributed something uniquely to that product." (Doc. 201, p. 22, quoting Herrick dep., Ex. 13 344:3-5). Defendant neglects to note that he adds that he was considering the exposure from the overall environment where Rhyne did the parts washing; Herrick could model just the parts washing alone as the near-field source; but that would not account for the other local exposures (e.g., coworkers also working with benzene contaminants). Doc. 201-3, Herrick dep. Ex. 13 pp. 344-46.

Exhibit 13. Thus, when he modeled Mr. Rhyne's benzene exposures from this activity, he included both the exposures from the parts washer and the exposures from products used by others more than three feet from Mr. Rhyne, i.e., the far field. *Id.* at 343:21-344:7. Since Mr. Rhyne typically used the Safety-Kleen parts washer in a room with others who also used solvent products, it was appropriate to model both the near and the far field exposures.

Dr. Herrick correctly opined that his modeling was a good estimate of Mr. Rhyne's exposure to benzene from the Safety-Kleen parts washing machine. Herrick dep. Ex. 13 345:8-15. Use of products in the far field typically contribute only a small portion of the exposure.[34] Herrick Decl. ¶34. The fact that Defendants disagree with Dr. Herrick's input parameters do not render his opinions inadmissible. *See Milward, supra,* at 107-08 (stating that "questions about the proper input parameters are questions about the factual underpinnings of the opinion, which are matters going to weight rather than admissibility.")

Mr. Rhyne was exposed to benzene every time he used the Safety-Kleen parts washer. As this court has already stated in its ruling on motions for summary judgment, "an exact quantitative level of exposure is not always necessary to establish causation." Doc. 180 at p. 6. Thus, it is not necessary for Dr. Herrick to provide a precise quantification of the Safety-Kleen benzene exposure. *See Lohrmann v. Pittsburgh Corning Corp.*, 782 F.2d 1156, 1162 (4th Cir. 1986); *In re Lipitor (Atorvastatin Calcium) Mktg., Sales Practices & Prod. Liab. Litig.*, 892 F.3d 624, 639 (4th Cir. 2018); *Jones v. Owens-Corning Fiberglas Corp*., 69 F.3d 712, 716 (4th Cir. 1995). For the same reason, it was not necessary for the Plaintiffs' experts to have a precise

[34] Dr. Herrick's Declaration explains that the secondary/far field sources of benzene exposure were small; for example when Mr. Rhyne used the Safety-Klee in the pipe shop for 2 hours, his average benzene exposure was 1.0 ppm (3.2 mg/m3) when the primary and secondary sources were included. If the model was restricted to benzene exposure from the Safety-Kleen in his near field, Mr. Rhyne's exposure would have been 0.85 ppm (2.7 mg/m3). The difference is about 15%. Herrick Decl. ¶35, Ex. 1.

exposure quantified in order to reach their causation opinions. Indeed, exposure well below the benzene air concentrations specific to Safety-Kleen's parts washer, e.g., 0.85 ppm,[35] can cause AML. *See* Gore expert report, Doc. 126-9, p. 16 ("as with benzene-associated risk for leukemia, there is no clear evidence of a threshold below which benzene does not cause hematotoxicity in humans."); Infante report, Doc. 128-3, pp. 33 ("Thus, benzene exposure intensity of as little as 0.8-1.56 ppm demonstrated a nearly 7-fold elevation in the relative risk of leukemia that was statistically significant."), 35 ("No evidence was found of a threshold cumulative exposure below which there was no risk.").

E. Dr. Herrick Did Validate His Model Results.

Defendants again distort Dr. Herrick's testimony to claim that "Dr. Herrick also failed to validate his results" and "Defendants' expert, Dr. Spencer, did in fact validate his results" and that this warrants preclusion of Dr. Herrick's opinions. Def. Br. pp. 23-24. This is inaccurate. With regard to validation, Dr. Herrick explicitly states in his expert report:

> On days when Mr. Rhyne used a parts washer for a period of 1 hour, his predicted 50th percentile exposure for the 1-hour period was 7.1 mg/m3, with an interquartile confidence interval of 3.7 mg/m3 to 14 mg/m3 (median 2.2 ppm, range 1.2 to 4.4 ppm). ***The reports of the ART models including input and output values from the models are included in the Appendix. These results are in good agreement with published investigations and summaries of benzene exposures from mineral spirits parts washing.*** A study published by Fedoruk et al. 2003 measured the emissions and resulting exposures to benzene from a parts washing machine using mineral spirits as the solvent.… Considering this temperature difference, the agreement between Fedoruk et al. values and the exposure estimated for Mr. Rhyne is very good.

Herrick Report, at pp. 25-27 (emphasis added). He thus attached the ART analytical information and found them validated (in agreement with) other studies.

[35] Dr. Herrick's Declaration explains that Mr. Rhyne's Safety-Kleen specific exposure during the use of the parts washer in the pipe fabrication shop was 0.85 ppm (2.7 mg/m3). Herrick Decl. ¶35.

During his deposition Dr. Herrick explained that: "Well, like any of these model predictions, I didn't formally validate the result. I think we talked about this this morning. I don't really consider that... anyone really 'validates' them in the strictest sense. **About the closest, you know, that I would say we've done is that LeBlanc paper, where we tried to evaluate how well the results compared with each other**."[36] The testimony that Dr. Herrick referred to from "th[e] morning" of his deposition, was:

> Well, 'validation's' an interesting term. You know, it, sort of, implies that you - - you know the ultimate truth and you compare your model or your measurement against that, you know, knowable truth. So I would say, you know, on that basis, really, none of these models have been formally validated. I think a better term to apply is that their - - their performance has been evaluated. I think that's a better way to put it than saying it's validated.[37]

Dr. Herrick's Declaration explains that in his deposition he "used the term 'validate' in the strictest sense, meaning that a model has been compared to a gold standard reference value. This is the way the term validation is used in the laboratory, where a measurement result is compared with a known concentration of a chemical in a standard reference material. When 'validated' is defined in this manner, no model has ever been 'validated.'" Herrick Decl. ¶27, Ex. 1.

Dr. Herrick explains that the common approach for "validation" is to compare previously measured exposures from other studies with the results of current modeling. Herrick Decl. ¶29. Dr. Herrick compared his exposure analysis of Mr. Rhyne to the Fedoruk study and found it to be in good agreement. Further, Dr. Herrick was a co-author of the LeBlanc study which examined exposures in the use of a parts washer (as here), modeled using the near field/far field approach, and modeled using the ART method. These results were published in the

[36] *See* Doc. 201-3, p. 255:9-21.
[37] *See* Doc. 201-3 p. 88:3-15.

peer-reviewed literature. (Doc. 201-11). This is clear *validation* of his method -- scrutiny by independent peer review.

Dr. Herrick's "validation" approach as or more solid than the approach used by Mr. Spencer, Defendants' expert. Yet this Court would never have known that were it to believe Safety-Kleen's misrepresentations. Mr. Spencer found 0.038 ppm benzene measured in the use of Liquid Wrench (a figure taken from the Williams study) compared to 0.12 ppm from his own modeling, was, as he characterized it, in "good agreement." Meanwhile, defense expert Mr. Spencer's modeled benzene exposures were 300% different than the Williams Liquid Wrench air monitoring data he used as a benchmark. Herrick Decl. ¶29. When Dr. Herrick's ART model was compared to the Fedoruk benzene air monitoring, the modeled results were only 15% different then the measured benzene air concentration. *Id*. Thus, Dr. Herrick's model is not only validated, but far more accurate than the defense expert's model.

F. Mr. Rhyne's Use Of Raffinate Liquid Wrench Is Supported By Ample Evidence.

Defendants incorrectly argue that there is no factual basis upon which to assume that Mr. Rhyne was exposed to the raffinate version of Liquid Wrench until January of 1979. Def. Br. p. 24. Defendants' argument omits both direct evidence, and circumstantial evidence, that Mr. Rhyne was exposed to the raffinate version of Liquid Wrench into January 1979. Much of this evidence was previously presented at summary judgment and the Court in ruling on those motions rejected Defendants' contentions of no exposure. Docs. 152, 180. Mr. Rhyne's deposition testimony provides direct evidence that he was exposed to the Raffinate version of Liquid Wrench into at least (and most likely beyond) January, 1979. The Raffinate version of Liquid Wrench contained between 3 and 30% benzene. There is no dispute that benzene smells

sweet. **Mr. Rhyne testified that the Liquid Wrench he used at Duke smelled sweet through 1979**.[38] Specifically, Mr. Rhyne testified at deposition that:

> Q. From the time you used the Liquid Wrench in the seventies until the time in the eighties, did you notice any difference in the smell of the container of the liquid in it?
> A. I can smell the stuff right now. Now, I know --
>
> Q. I understand.
>
> A. I know I can -- I smell it right now. And back when I used it in the shop down at the pipe fab shop, it had a real strong, sweet smell to it. But I didn't -- and I was in the shop. ***Any time after the shop and after the eighties,*** I was probably more ventilated than I was down at the shop. ***So I just don't remember the sweet -- it had like a strong, sweet smell to it. I don't remember that.***
>
> Q. I don't want to cut you off. My question actually is: Do you remember a difference in the smell of the Liquid Wrench from that Liquid Wrench you used ***in the seventies versus the Liquid Wrench you used in the eighties?*** Do you remember it being different or the same?
>
> A. Yeah, I thought I answered that. ***I don't remember the sweetness -- the same smell in the eighty time frame.*** And it may have been because in the turbine buildings and wherever I was working at that time was so much larger, **I just don't -- I don't remember the sweetness**.

(Exhibit 4), Bruce Rhyne Dep. pp. 250:5-251:15. Direct evidence also comes from the testimony of former Radiator Specialty Co. employee James Wells. Mr. Wells testified that all Liquid Wrench containers that were eight ounces in size or greater contained only the Raffinate formula from 1972 through 1979. James Wells 11/6/2008 dep p. 130:21-131:8 (Exhibit 12).

In addition to this direct evidence, there is also ample circumstantial evidence to support that the Raffinate exposures continued into January 1979. The last shipment of raffinate was delivered from US Steel to Radiator Specialty Co. by April of 1978. Radiator Specialty

[38] *See* Herrick Report, Doc. 201-2 at 22 ("I considered that Mr. Rhyne used Liquid Wrench from the existing supply until the end of 1978. The duration of his use in the Pipe Fab Shop therefore was from July 1976 until January 1979, a 2.5-year period.").

continued to use US Steel's Raffinate until the supply ran out. Dr. Herrick explains in his report that, "[a] memorandum from Jim Wells[39] dated March 30, 1978, reports that the benzene-containing Liquid Wrench has been replaced, and the existing supply of raffinate will be exhausted by the end of April 1978."[40] Note that this memorandum does not say when Radiator Specialty last sold the Raffinate version of Liquid Wrench. It only says when it last manufactured the product. There is no other documentation establishing when Radiator Specialty last sold the product.

Radiator Specialty continued to sell the Raffinate version of Liquid Wrench in its inventory and never issued a recall of the Raffinate version.[41] Logically, then, the facts support that Raffinate-containing Liquid Wrench was sold after April, 1978. Moreover, Liquid Wrench was sold through distributors and retailers. Customers like Duke also kept the product in their inventory. Thus, even when Radiator Specialty stopped shipping the Raffinate Liquid Wrench from its factory, the product was already in circulation and remaining in circulation after April, 1978 as pre-existing product combined with new product made its way through the chain of distribution.[42] See, e.g. N.C.P.I. Civil 101.45. (Circumstantial evidence is given equal weight as direct evidence.) This corroborates Mr. Rhyne's testimony that the Liquid Wrench used through the end of the 1970's continued to have the characteristic sweet smell of benzene.

[39] Jim Wells was an employee of Radiator Specialty Co.
[40] *See* Herrick report, Doc. 201-2 at 20.
[41] See Herrick report, Doc. 201-2 at 22 ("As there is no indication that the benzene continuing version of Liquid Wrench was recalled, I considered the Mr. Rhyne used Liquid Wrench from the existing supply until the end of 1978.")
[42] We see this happen every day. When one goes to a grocery store and buys a jar of pickles, there is typically stamped on the jar a "best if sold buy" date. The reason is that manufacturers and retailers realize that product will remain in the chain of distribution and on store shelves for long periods of time after it leaves the manufacturer's facility.

Indeed, Dr. Herrick testified that this was one of the reasons for opining that Mr. Rhyne was exposed to the Raffinate version of Liquid Wrench through January 1979:

> Q. So the last sentence of the second full paragraph -- I just want to make -- make sure I understand what you did. You assumed that Liquid Wrench contained raffinate until January of 1979; correct?
>
> A. Yeah, end of -- yeah, right. End of '78, December of '78/January of '79; right.
>
> Q. And that's based on an assumption that there was no recall of the product, so you assumed it contained raffinate after the last sale by US Steel of raffinate to radiator [verbatim] in April of 78[43]; is that right?
>
> A. ***Yeah, that's what I was trying to approximate that there was a certain amount of it that was already out there in the supply chain, and it wound up being used, and -- and so my cut off then was January '79.***

Deposition of Robert Herrick, Doc. 201-3, at 167:15-168:6 (emphasis added).

Dr. Herrick's opinion that Mr. Rhyne was exposed to the Raffinate-containing Liquid Wrench therefore is more than adequately supported by (1) direct evidence in the form of Mr. Rhyne's description of the product, and (2) circumstantial evidence of how long the product remained in the stream of commerce after production stopped at the end of April, 1978. Notably, there is no evidence to refute Dr. Herrick's opinion.

CONCLUSION

For the reasons set forth above the Plaintiff respectfully requests that the Court deny United States Steel and Safety-Kleen's Motion to Exclude the Opinions, Testimony and Report of Dr. Robert Herrick.

[43] Counsel's question misstates the evidence. There is no evidence that Radiator Specialty Co. last sold the Raffinate version of Liquid Wrench in April, 1978.

Respectfully Submitted,

LOCKS LAW FIRM

Dated: April 21, 2020

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Appendix of Exhibits:
Exhibit 1 - Declaration of Robert Herrick
Exhibit 2 - Robert Herrick Dep. 9.23.19 in Howell
Exhibit 3 - Herrick CV
Exhibit 4 - Bruce Rhyne Deposition Pages
Exhibit 5 - Sal Sk 6221-6223
Exhibit 6 - Sal Sk 07273
Exhibit 7 - Benzene in Fuels Memo
Exhibit 8 - Sal Sk 5678
Exhibit 9 - James Breece Dep 9.21.2007 Pages
Exhibit 10 - Operation Health and Risk Assessment Memo
Exhibit 11 - SK 4/1/1992 Memorandum
Exhibit 12 - James Wells Vol. 2, 11/6/2008 Pages
Exhibit 13 - Dr. Herrick Deposition Pages

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true copy of the foregoing was served by e-filing via the Western District of North Carolina's e-Filing Portal to all counsel of record on this date, Tuesday, April 21, 2020

Respectfully submitted,

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